

October 18, 1973

Dr. F.H.C. Crick  
MRC Laboratory of Molecular Biology  
University Postgraduate Medical School  
Hills Road  
Cambridge, CB2 2QH, England

Dear Francis,

Please forgive the delay in sending these pictures. Your letter containing yours and Roger's speculations and questions about what the SV40 structures looked like arrived while Jack Griffith was away and I had to wait for his return to get at the notebooks.

I hope that these pictures give you a better idea of what I tried to describe in my letter (obviously the sketch was misleading but, frankly, I didn't think you'd take the dimensional parameters of my secretary's transposition of my rough sketch so seriously). Figure 1 shows a field of the "horseshoe" structures and Figure 2 is an enlargement of a characteristic "doughnut" (the legends to each were added by Jack for explanation). Figure 3 illustrates the molecule you discovered at the observatory. Figure 4 and 5 show two views of the SV40 mini-chromosomes following a minute or two exposure to 1 M NaCl. The rings appear to "relax" and free DNA strands begin to be seen, often appearing to be emanating from relaxed or disintegrating structures. (After 30 to 60 minutes in 1 M salt the viral DNA is very nearly freed of bond protein as judged by its sedimentation constant in neutral sucrose gradients.) Figure 5 and several other not included here show what I meant by a "ribbon-like" appearance. In referring to the spilled-phage look I meant structures which still appear to be partially complexed to protein but have DNA streaming from a focus of nucleoprotein.

A word of caution! Although Jack is reasonably confident of the micrographs of the native mini-chromosomes, he prefers to be cautious about the micrographs of the salt-treated structures. He has seen them in two different experiments but there are still some controls he wants to do to make sure that the appearance is not artifactual.

Dr. F.H.C. Crick  
Page Two

Jack also wanted me to tell you that he is now in Europe and will be there through January working off and on at the Philips microscope laboratories in Holland. He'd like very much to come and visit Cambridge to talk to you and Rog (and others) about your work and to see your pictures of chromatin fibers. I enclose his itinerary during the next two months and I'm sure he'd appreciate hearing from you and Rog.

With best regards,  
Sincerely,

PB:af  
Enc.